Fig. 8. From the points *b c*, Fig. 3, draw isometrical lines, meeting in the point *d ; a c d b* will be the isometrical projection of outline of top of box shown in plan *a*, Fig. 6. From *a c* and *b* draw perpendicular lines *c f*, *a e*, *b g*, and make them equal to the line *e d*, Fig. 8. From the point *e*, Fig. 3, draw isometrical lines to the points *f* and *g*. The rectangle *c f e a*, Fig. 3, is the isometrical projection of the outline of side of the box *b* in Fig. 8 ; and the rectangle *a e g b*, Fig. 3, of the end *c*, Fig. 8. The thickness of the sides is shown by taking from the plan *a*, Fig 8, the thickness, and setting it off from the points *b a c*, and *d*, to *k k i* and *b ;* and from these points drawing isometrical lines, which, intersecting, form an inner rectangle, as shown in Fig. 3. The method of filling in the notches on the sides, Fig. 9, which, for convenience, is shown to a scale twice the size of that in Fig. 3. To put in the notches at the sides of the box in Fig. 3, draw, as in Fig. 9, two lines, *a c*, *b d*, representing the edge of the box. From *a*, Fig. 8, take the distance *d i*, and set it off from the point *a*, Fig. 9, to the point *e ;* set off the distance *j i*, Fig. 8, from *e* to *f*, Fig. 9. From *e* and *f*, Fig. 9, draw isometrical lines to *h* and *g*. From *h*, *e*, and *f*, draw perpendicular lines, equal to the distance *k l*, in *b*, Fig. 8, *h i*, *e j*, and *f k*.

Proceeding to other examples, we give in Fig. 10, at *a*, the plan, *b* the section of a cutstone, and at *c* an isometrical view of it. In drawing this proceed as in Fig. 11, which, for convenience, is shown of double the size. Draw two isometrical lines *a b*, *a c*, Fig. 11, and make *a b*, *a c*, equal to *d e*, *d f*, Fig. 10 ; draw the perpendiculars, *c f*, *a d*, Fig. 11, and make them equal to the depth of end *g*, Fig. 10. Join *d f*, *d e*, and from *f* and *e* draw lines cutting at *g*. From *f*, Fig. 10, measure to *h*, and set off this distance from *g* to *h*, Fig. 11, draw *h i*, and finish as shown.

Practical Carpentry.
COVERING OF SOLIDS.

On Plate 55 we show how the development of surfaces is generated by a straight line moving parallel to itself. An inspection of the figures will be sufficient to explain the process. These figures contain some of the forms of development that occur in practice, as applicable to the sofits of arches in doors, windows, reverses, and passages. In all these diagrams, the point E is in the middle of the arc which forms the end of the arch. A *e* on the straight line is the developement, if A E, *e d* is equal to *e* D, and *e p* is equal to E P, *e f* is equal to *e* F. Where there is not sufficient room for the plan and sections of the solid and development of its surface in one diagram, Figs. 5, 6, and 7 show how they may be separated.

Next month we will give practical illustrations on the covering of solids in sufficient number to cover any exigency that may ever occur in the practice of any ordinary builder, and after that we will enter into the discussion of matters that the workman meets with in his every-day occupation.

The Sectorian System of Hand-Railing.
SEVENTH PAPER.
Plate 50.

On this plate are shown the horse-pieces of stair, Plate 42, Sec. 2.

Fig. 1 is the first piece, and runs up to the first angle at A.

Fig. 2 commences at A, and extends to the next angle at B.

Fig. 3 commences at B, and extends to the floor landing at C.

Fig. 4 is the first cross-piece in rear of cylinder.

Fig. 5 is the second cross-piece, and constitutes all the full-length pieces. All the others, as marked on Plate 42, from one to eight, are *fillers*, and should be well filled, as the lower and upper pieces depend, in part, on them for support. All the bevels for cutting the riser lines can be obtained on plan—Plate 42, Sec. 2.

Section 2 is a continuation of Plate 42 and Section 1 of 50, Fig. 1, showing the plan, Plate 42, with tangents drawn as at a, b and c : a, being the centre line, has all to do with the sector.
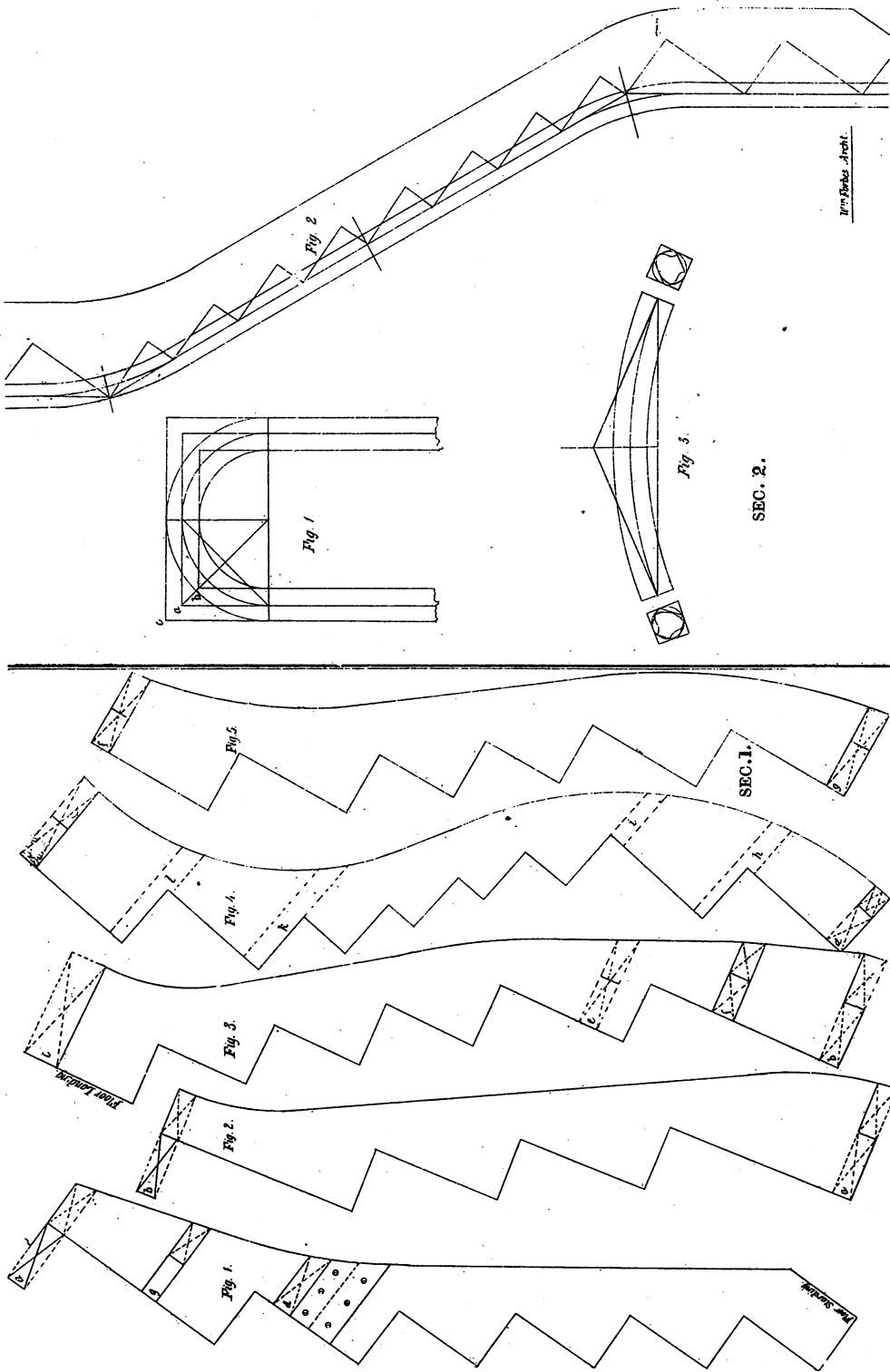
Fig. 2 is the stretch-out of winders in the wreath, with two lower flyers, and one above the cylinder. The rail shows the easements, which must be obtained in the usual way, with the falling moulds. It will be seen that the falling moulds are straight with the exception of a slight curve at the end. After the convex and concave slabs are removed from the wreath-pieces, thus giving the outer and inner twist, the application of the falling mould, as laid down, will find plenty of wood for its use in giving shape to the rail. Of course it is understood that kerfing is the mode for the top and bottom twist.

Fig 3 is the quadrant wreath-piece for Fig. 1, the end sections showing the direction given to spring and plumb bevels. The same mould will answer for both pieces by reversing the same.

It will be seen by the plates presented, that all lines calculated to confuse have been dispensed with ; while everything, it is thought, has been introduced to make the work plain to the comprehension of any one of ordinary capacity.

SEND six cents for " Hints on Estimating."

PLATE 50.

THE SECTORIAN SYSTEM OF HAND-RAILING.